PROJECT WICHITA
Update and Discussion Guide

April 2016

EXHIBIT 1410.R

GOOG-PLAY-007339480.R

EXHIBIT 1410.R-001

Executive Summary

Issue

- Facebook has preloaded at least three Facebook apps on Samsung S7 devices; one or more of the apps likely has 'Install_Packages' permission

- **Facebook is actively using these preloaded apps to install and update the core Facebook app (com.facebook.katana), circumventing Play, in some cases**

Meeting Objectives

- Review behavior

- Discuss implications and potential next steps

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- Core FB app (katana) is preloaded on many more devices. We've confirmed the behavior / screenshots shown in this deck only for S7s thus far

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EXHIBIT 1410.R-002

Facebook / Samsung has preloaded <u>at least three Facebook apps</u> on Samsung S7 devices
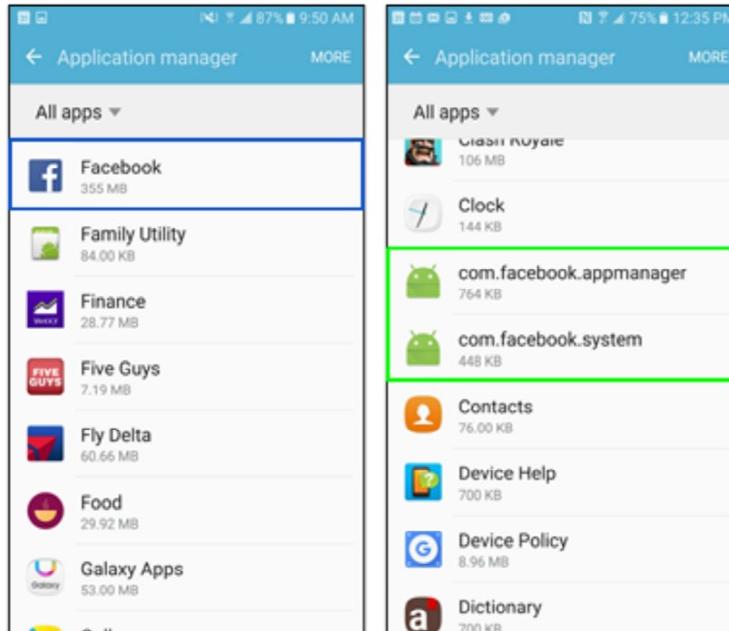
View from device application manager

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EXHIBIT 1410.R-003

Facebook app (com.facebook.katana) preload footprint in US
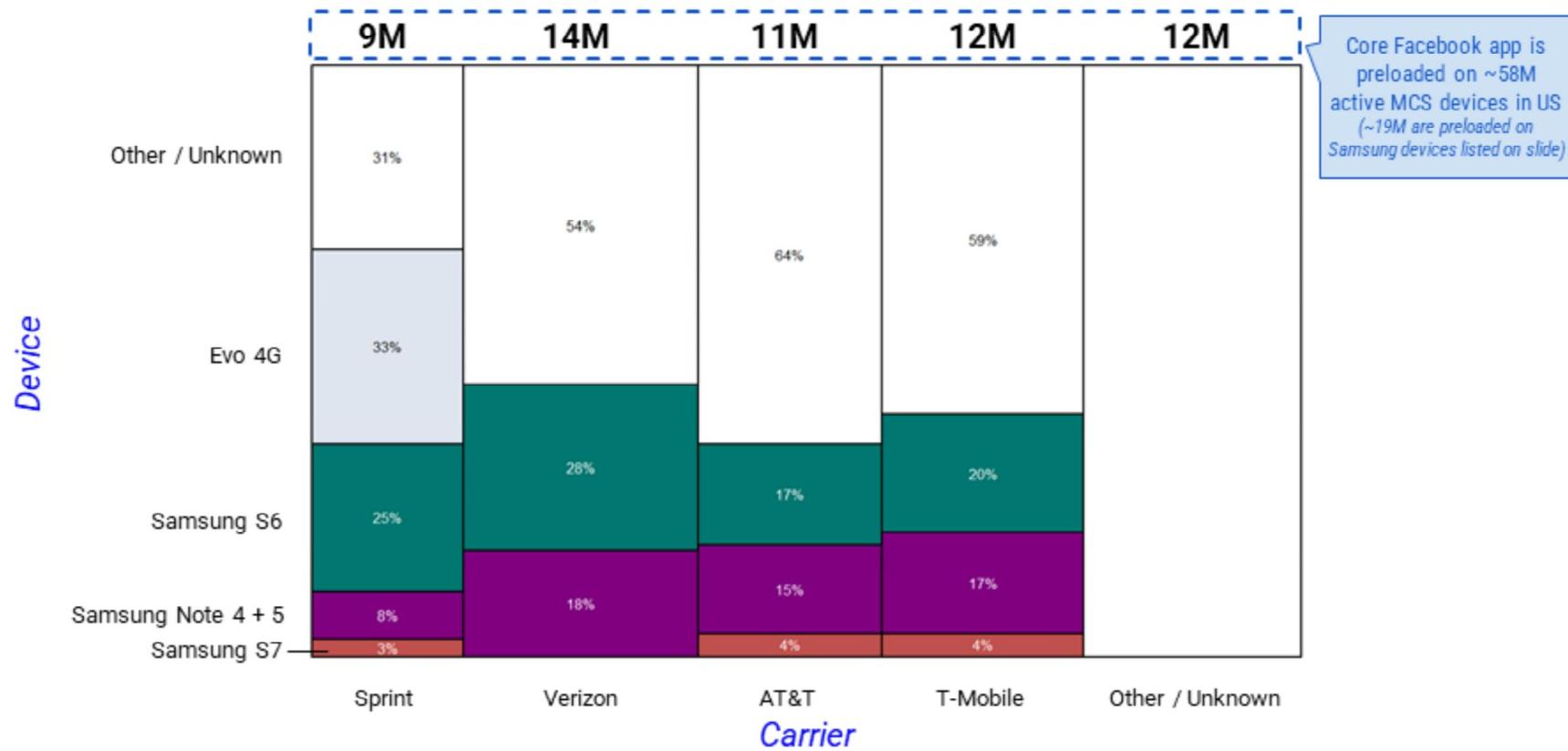
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EXHIBIT 1410.R-004

S7 treats these preloaded apps as "Android system apps": user cannot uninstall them via the Play Store or Android Application Manager
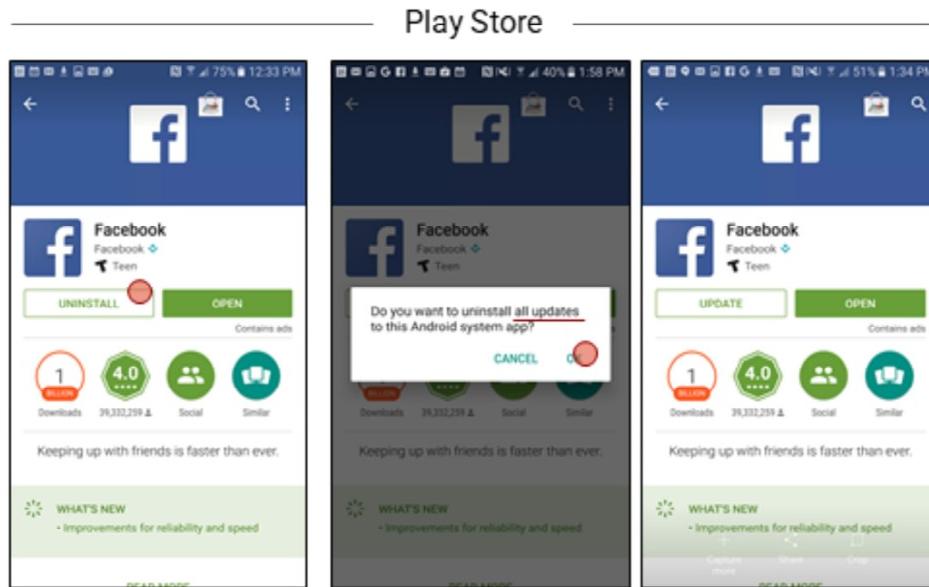
Play Store

User can uninstall _updates_ to com.facebook.katana via Play Store

Application Manager
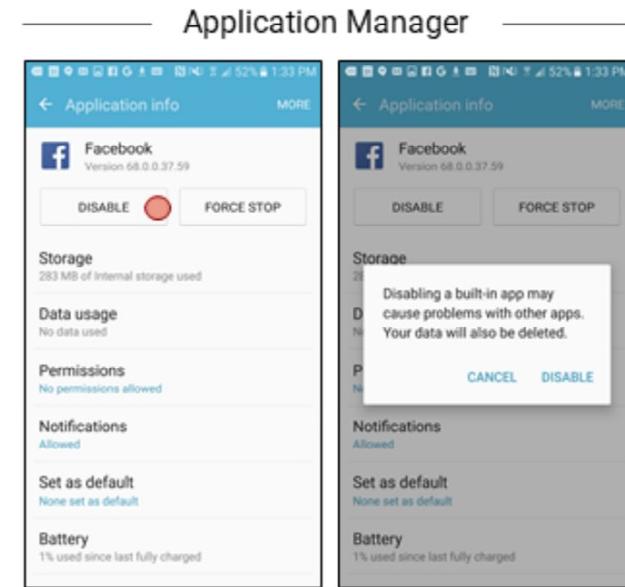
User can disable (but non uninstall) all Facebook preloads in Android Application Manager

"Cold start" launch of core Facebook app triggers what seems to be a Facebook-driven install (on a T-Mobile S7)

User opens Facebook app for first time on T-Mobile S7

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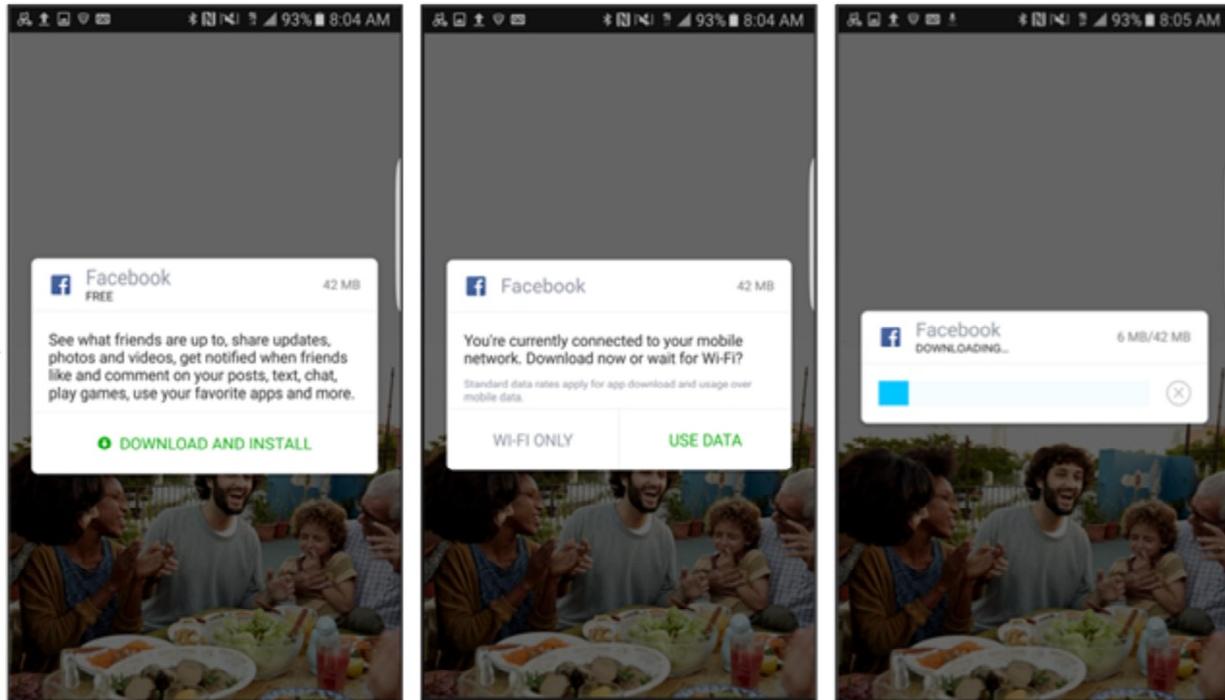
EXHIBIT 1410.R-006

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1   Resolve if this is dynamic code loading. AI to look at manifest.xml for FB App Manager?

           Mike Petrillo, 4/11/2016

1   Are we certain this is not Samsung's virtual preload system?

           Jamie Rosenberg, 4/13/2016

1   Aurash Mahbod@google.com can you please help here?

           Samer Sayigh, 4/13/2016

Facebook also redirects users from Play to Facebook app for install in some cases (assuming user previously disabled Facebook or uninstalled updates)

Play Store ——————————————— **FB Installer / App (?)** ———————
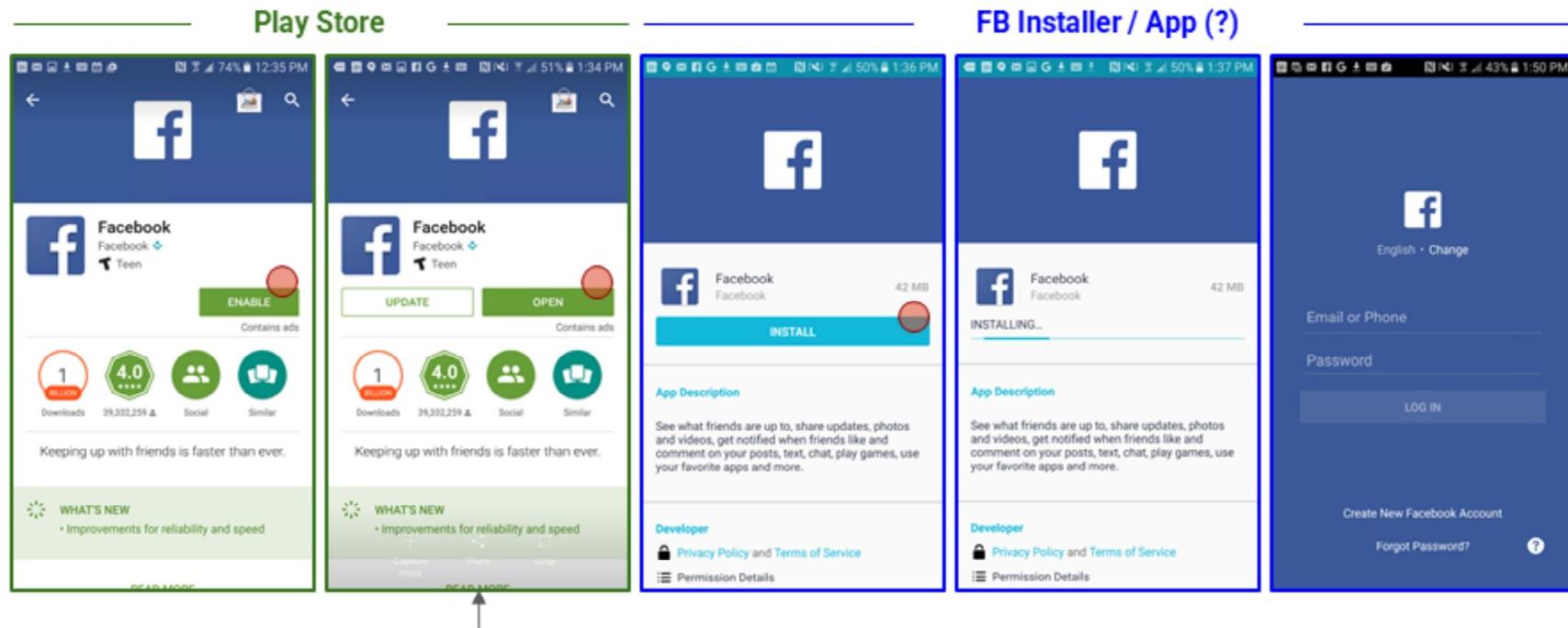
Note: Play triggers install if user clicks "Update" button.
Play may also automatically update the Facebook app

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EXHIBIT 1410.R-008

Facebook gives user option to allow Facebook to update its app

Facebook App Settings

'App Updates'
option is new!

Facebook Auto-Update
enabled by default
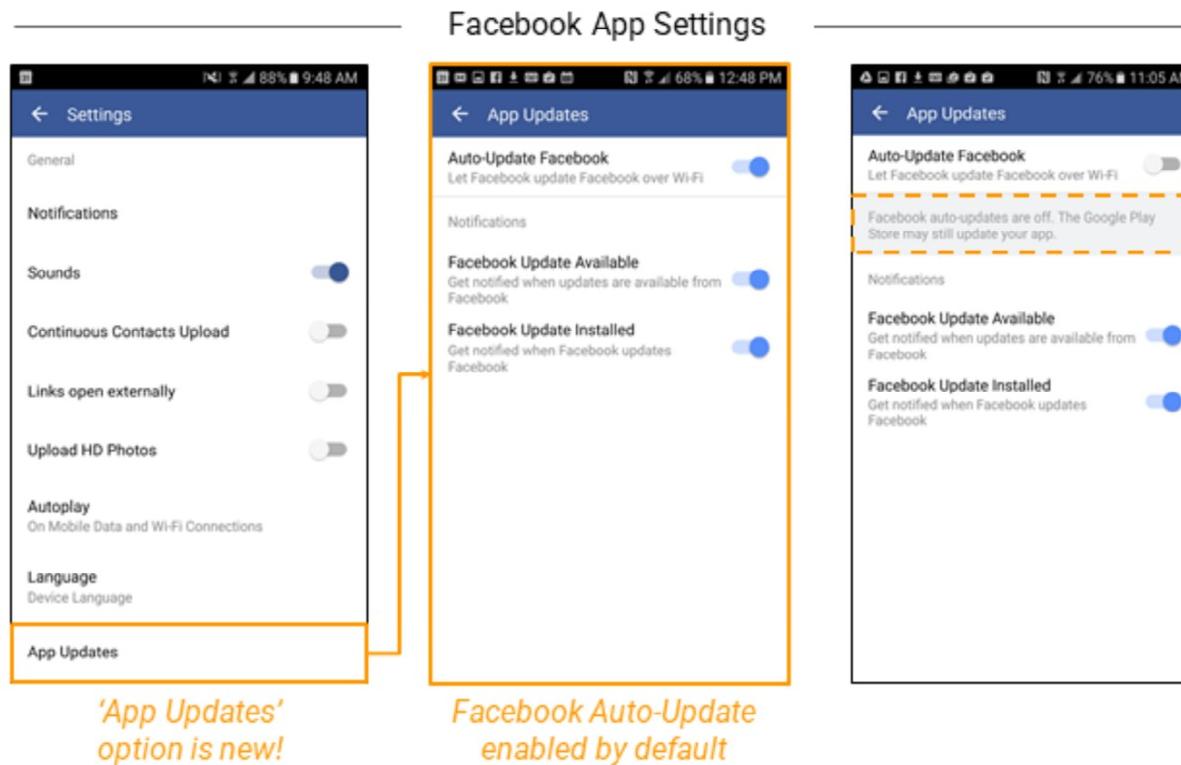
Facebook auto-update option is available even after Play updates the Facebook app

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EXHIBIT 1410.R-009

Implications

Immediate	Longer Term
• **User Confusion**: Users may believe Play facilitates install / update of Facebook app, while, in reality, Facebook does • **Security Concerns**: If user disables 'Verify Apps', Facebook updates will bypass certain Android security measures, including malware detection • **1P App Management**: Facebook may decide to manage updates to all its 1P apps. As other developers notice, they may begin to do the same (e.g. Amazon Underground)	• **3P App Distribution**: One or more preloaded Facebook apps may have INSTALL_PACKAGES permission. If so, Facebook could distribute 3P apps, possibly to support direct fulfillment on Facebook ads or to create a standalone app store

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What does Google Play Policy say?

Relevant Google Play Policies

- "An app downloaded from Google Play may not modify, replace, or update itself using any method other than Google Play's update mechanism"

- "We don't allow apps that directly or indirectly engage in... promotion or installation tactics that... download apps without informed user action"

- "We don't allow apps or ads that mimic or interfere with system functionality, such as notifications or warning"

Interpretation

- Whether Facebook is violating current policy depends, in part, upon interpretation of "an app downloaded from Play"

- If a preloaded app updated by Play is considered to be "an app downloaded from Play", then Facebook is violating policy

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EXHIBIT 1410.R-011

Potential Next Steps for Discussion

Direct Engagement

- Initiate conversation with Facebook regarding intent and roadmap for 1P app management (*owner:* Kirsten Rasanen@)
- Share this doc with select folks from Android Leads and Android BD to inform upcoming discussions with Facebook

Policy

- Update existing policy language to clarify that apps updated by Play are considered "apps downloaded from Play" (*owner:* Kevin Wa@)
- Issue policy violation warning to Facebook (*owner:* Kevin Wa@)

Technical

- Warn users of risks associated with installing / updating apps via non-Play sources (e.g. using real-time, user-facing dialog boxes)
- Require user to enable "unknown sources" for 3P app install, even when app is preloaded and has INSTALL_PACKAGES permission
- *Both options are likely technically feasible for 3P <u>installs</u> today, but may not be possible for 3P <u>dynamic code load</u> until Android O release (or MR in N)*

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- Other Technical Response Options to Consider
- Visual clarity to user of who installs / updates app

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2	Aurash Mahbod@google.com to weigh in. Here is Rich's old doc for reference: https://docs.google.com/document/d/1GAzshDHYBR_3HrCeza8gwOAuoHz-LPZPrQ66v95EJ3s/edit?ts=570bc8c4 Samer Sayigh, 4/11/2016
2	Let's make this more proactive. Write out a potential plan and then we can revise it. Mike Petrillo, 4/11/2016
2	Does dynamic code loading introduce a new loophole? Jamie Rosenberg, 4/13/2016
3	Not necessarily. Policy states "an app downloaded from Play may not *modify*, replace, or update itself..." from non-Play sources -- I think dynamic code load qualifies as modification. There's also a proposal to update Play policy language to clarify this (ongoing discussions with legal; policy update date TBD). The point on this slide re dynamic code load was relevant *if* we wanted to introduce user-facing warnings at time of 3P install or code load (but sounds like we'd previously decided against that). Android Security mentioned there may be technical limitations in showing user-facing warnings at time of 3P code load Samer Sayigh, 4/13/2016

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EXHIBIT 1410.R-013

Appendix

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EXHIBIT 1410.R-014

Thinking through technical solutions . . .

Near Term	Long Term
Paul Gennai@)	Ficus Kirkpatrick@)

All app updates are verified against source of install
- Throws dialogue box (à la Sidewinder) if update from source other than the one that drove the install

Limit use of Google APIs to apps installed from Play
- Billing Zeina Oweis@)
- Other?

Play signs all apps
- Migration challenges?
- Understand data savings

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3   Ficus Kirkpatrick@google.com
       Mike Petrillo, 4/13/2016

4   Paul Gennai google.com
       Mike Petrillo, 4/13/2016

1   There's also the work to only allow payments from Play delivered installs (Zeina is on point)
       Paul Gennai, 4/13/2016

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EXHIBIT 1410.R-016

Facebook app (com.facebook.katana) preload footprint, globally

Count of Active MCS Devices with preload of com.facebook.katana, by country
millions
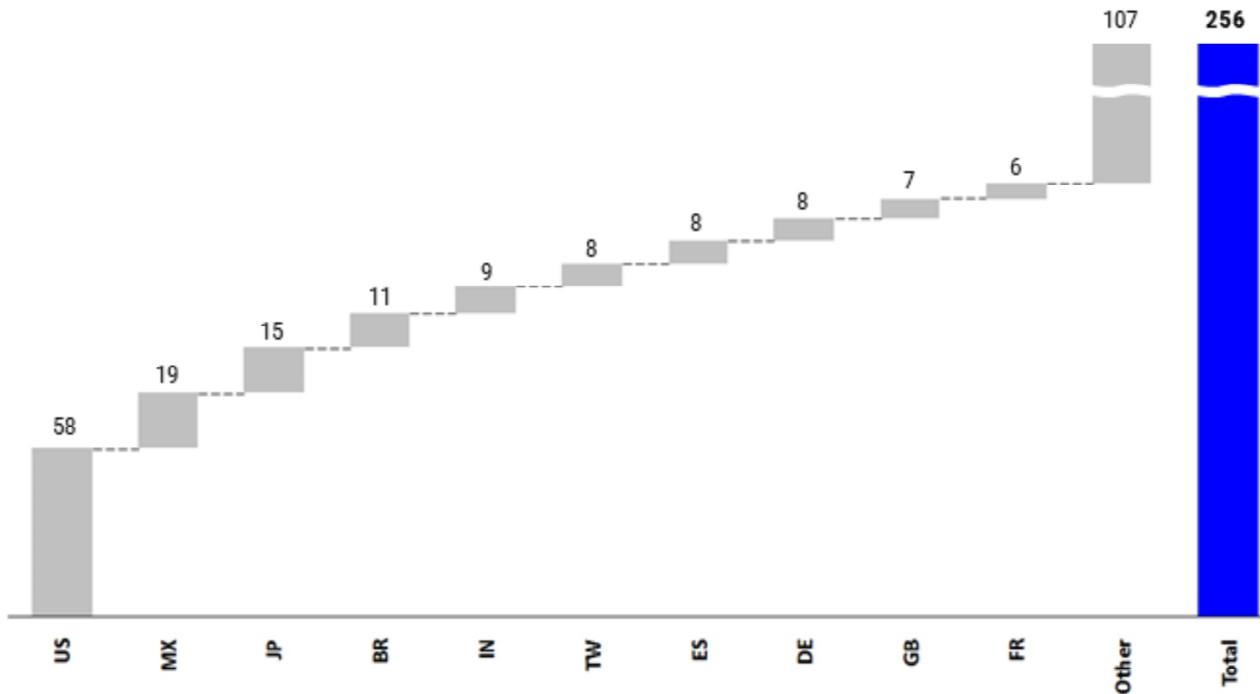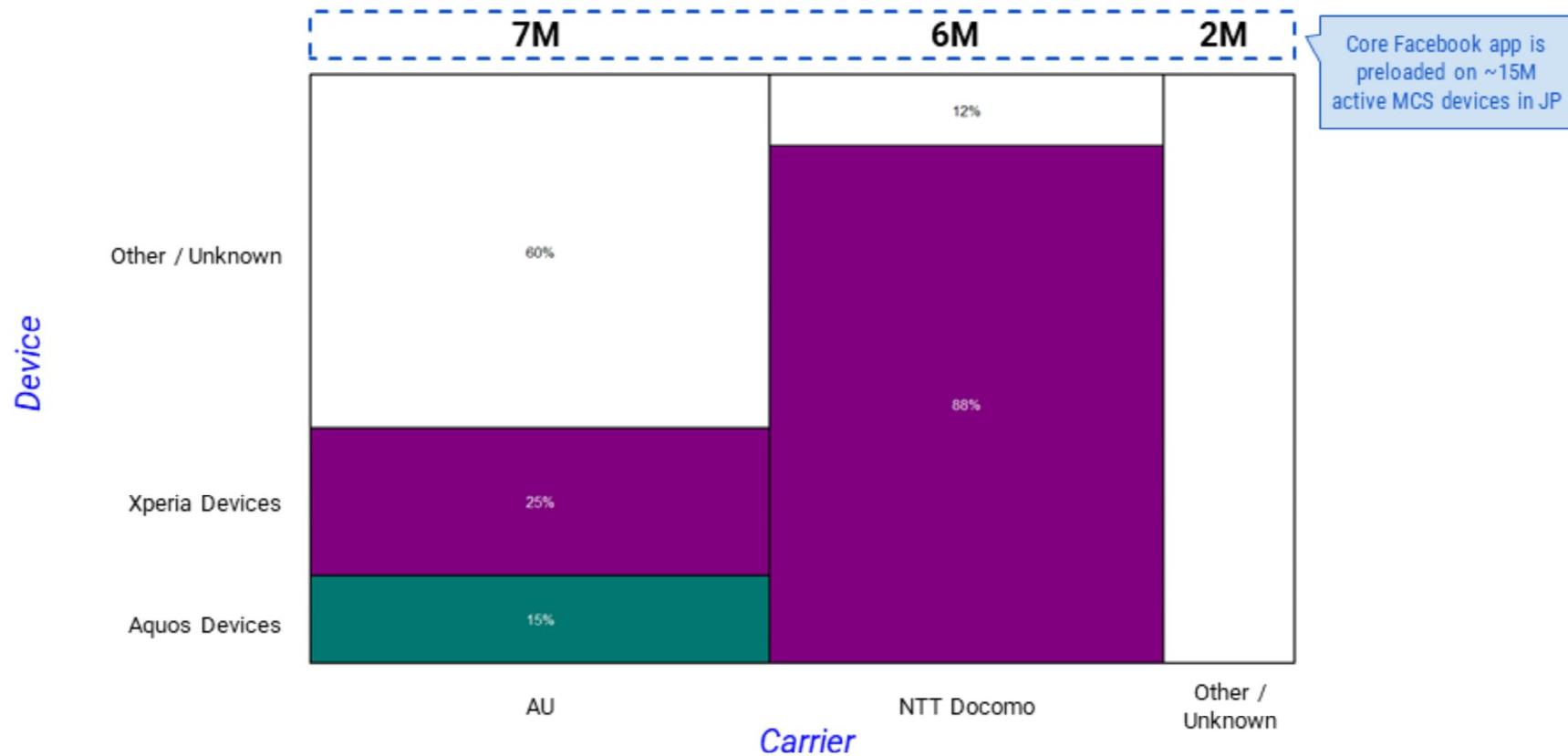
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EXHIBIT 1410.R-017

GOOG-PLAY-007339497.R

EXHIBIT 1410.R-018

Facebook app (com.facebook.katana) preload footprint in KR

Facebook is preloaded on ~1M active MCS devices in KR
(primarily on LG U+ devices)

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EXHIBIT 1410.R-019